



Figure 1B

AGAAGCCCTTTGAGAGTGGAAGTGACAAAATCTCCAAGGAAGTTGTACCGTCTTTG  
GCCTGTGAATGGTCTCAACTAACCCTTTTCAGGTCTAAATGGAGCCCAGATGGAGAA  
AATACCCCTATTGCATATTTCTTCATGTGACCAAAATATTTTCAGAAAAAGACCTATTA  
GACACAGAGAACAAAAGAAAGAAAGATTTTCTTACTTCAGAGAATTCTTTGCCACGT  
ATTTCTAGCCTACCAAAATCAGAGAAGCCATTAATGAGGAAACAGTGGTAAATAA  
GAGAGATGAAGAGCAGCATCTTGAATCTCATACAGACTGCATTCTTGCAGTAAAGC  
AGGCAATATCTGGAACCTTCTCCAGTGGCTTCTTCATTTTCAGGGTATCAAAAAGTCTA  
TATTCAGAATAAGAGAATCACCTAAAGAGACTTTCAATGCAAGTTTTTTCAGGTCATA  
TGACTGATCCAACTTTAAAAAAGAACTGAAGCCTCTGAAAGTGGACTGGAAATA  
CATACTGTTTGCTCACAGAAGGAGGACTCCTTATGTCCAAATTTAATTGATAATGGA  
AGCTGGCCAGCCACCACCACACAGAATTCTGTAGCTTTGAAGAATGCAGGTTTAAT  
ATCCACTTTGAAAAAGAAAAACAAATAAGTTTATTTATGCTATACATGATGAAACATCT  
TATAAAGGAAAAAAATACCGAAAGACCAAAAATCAGAACTAATTAAGTTCAGCC  
CAGTTTGAAGCAAATGCTTTTGAAGCACCACCTTACATTTGCAAATGCTGATTCAGGta  
cctctgtct

Exon 11

tttggttttatgtagGTTTATTGCATTCTTCTGTGAAAAGAAGCTGTTTACAGAATGATTCT  
GAAGAACCAACTTTGTCCTTAAGTCTCTTTTGGGACAATTCTGAGGAAATGTTCT  
AGAAATGAAACATGTTCTAATAATACAGTAATCTCTCAGGATCTTGATTATAAAGAA  
GCAAAATGTAATAAGGAAAACTACAGTTATTTATTACCCAGAAAGCTGATTCTCTG  
TCATGCCTGCAGGAAGGACAGTGTGAAAATGATCCAAAAAGCAAAAAAGTTTCAGA  
TATAAAGAAGAGGTCTTGGCTGCAGCATGTCAACCAGTACAACATTCAAAAGTGG  
AATACAGTGATACTGACTTTCAATCCCAGAAAAGTCTTTTATATGATCATGAAAATG  
CCAGCACTCTTATTTTAACTCCTACTTCCAAGGATGTTCTGTCAAACCTAGTCATGA  
TTTCTAGAGGCCAAAGAATCATACAAAATGTCAGACAAGCTCAAAGGTAACAATTATG  
AATCTGATGTTGAATTAACCAAAAATATTCCCATGGAAAAGAATCAAGATGTATGTG  
CTTTAAATGAAAATTATAAAAACGTTGAGCTGTTGCCACCTGAAAAATACATGAGAG  
TAGCATCACCTTCAAGAAAGGTACAATTCAACCAAAACACAAATCTAAGAGTAATCC  
AAAAAAATCAAGAAGAACTACTTCAATTTCAAAAAATACTGTCAATCCAGACTCTG  
AAGAACTTTTTCTCAGACAATGAGAATAATTTTGTCTTCCAAGTAGCTAATGAAAGGA  
ATAATCTTGCTTTAGGAAATACTAAGGAACTTCATGAAACAGACTTGACTTGTGTAA  
ACGAACCCATTTTCAAGAACTCTACCATGGTTTTATATGGAGACACAGGTGATAAAC  
AAGCAACCCCAAGTGTCAATTAAGAAAGATTTGGTTTTATGTTCTTGCAGAGGAGAAC  
AAAAATAGTGTAAGCAGCATATAAAAATGACTCTAGGTCAAGATTTAAATCGGAC  
ATCTCCTTGAATATAGATAAAAATACCAGAAAAAAATAATGATTACATGAACAAATGG  
GCAGGACTCTTAGGTCCAATTTCAAATCACAGTTTTTGGAGGTAGCTTCAGAACAGC  
TTCAAATAAGGAAATCAAGCTCTCTGAACATAACATTAAGAAGAGCAAAATGTTCTT  
CAAAGATATTGAAGAACAATATCCTACTAGTTTAGCTTGTGTTGAAATTGTAAATAC  
CTTGGCATTAGATAATCAAAAGAACTGAGCAAGCCTCAGTCAATTAATACTGTATC  
TGCACATTTACAGAGTAGTGTAGTTGTTTCTGATTGTAAAAATAGTCATATAACCCC  
TCAGATGTTATTTTCCAAGCAGGATTTTAATTCAAACCATAATTTAACACCTAGCCAA  
AAGGCAGAAATTACAGAACTTTCTACTATATTAGAAGAATCAGGAAGTCAGTTTGAA  
TTTACTCAGTTTAGAAAACCAAGCTACATATTGCAGAAGAGTACATTTGAAGTGCCT  
GAAAACCAAGATGACTATCTTAAAGACCACTTCTGAGGAATGCAGAGATGCTGATCT  
TCATGTCATAATGAATGCCCCATCGATTGGTCAGGTAGACAGCAGCAAGCAATTTG

Figure 1C

AAGGTACAGTTGAAATTAACGGAAGTTTGCTGGCCTGTTGAAAAATGACTGTAAC  
AAAAGTGCTTCTGGTTATTTAACAGATGAAAATGAAGTGGGGTTTAGGGGCTTTTAT  
TCTGCTCATGGCACAAAACCTGAATGTTTCTACTGAAGCTCTGCAAAAAGCTGTGAA  
ACTGTTTAGTGATATTGAGAATATTAGTGAGGAAACTTCTGCAGAGGTACATCCAAT  
AAGTTTATCTTCAAGTAAATGTCATGATTCTGTTGTTTCAATGTTTAAGATAGAAAAT  
CATAATGATAAACTGTAAGTGAAAAAATAATAAATGCCAACTGATATTACAAAATA  
ATATTGAAATGACTACTGGCACTTTTGTGGAAGAAATTAAGTAAAATTACAAAGAGAA  
ATACTGAAAATGAAGATAACAAATATACTGCTGCCAGTAGAAAATTCTCATAACTTAG  
AATTTGATGGCAGTGATTCAAGTAAAAATGATACTGTTTGTATTTCATAAAGATGAAA  
CGGACTTGCTATTTACTGATCAGCACACATATGTCTTAAATTATCTGGCCAGTTTA  
TGAAGGAGGGGAAACACTCAGATTAAAGAAGATTTGTCAGATTTAACTTTTTTGGAAG  
TTGCGAAAGCTCAAGAAGCATGTCATGGTAATACTTCAAATAAAGAACAGTTAACT  
GCTACTAAAACGGAGCAAAATATAAAAGATTTTGAGACTTCTGATACATTTTTTTCAG  
ACTGCAAGTGGGAAAAATATTAGTGTCGCCAAAGAGTCAATTAATAAAATTGTAAAT  
TTCTTTGATCAGAAACCAGAAGAATTGCATAACTTTTCCTTAAATTCTGAATTACATT  
CTGACATAAGAAAGAACAAAATGGACATTCTAAGTTATGAGGAAACAGACATAGTT  
AAACACAAAATACTGAAAGAAAGTGTCCAGTTGGTACTGGAAATCAACTAGTGAC  
CTTCCAGGGACAACCCGAACGTGATGAAAAGATCAAAGAACCTACTCTGTTGGGTT  
TTCATACAGCTAGCGGGAAAAAAGTTAAATTTGCAAAGGAATCTTTGGACAAAGTG  
AAAAACCTTTTTGATGAAAAAGAGCAAGGTACTAGTGAAATCACCAGTTTTAGCCAT  
CAATGGGCAAAGACCCTAAAGTACAGAGAGGCCTGTAAAGACCTTGAATTAGCAT  
GTGAGACCATTGAGATCACAGCTGCCCCAAAGTGTAAGAAATGCAGAATTCTCTC  
AATAATGATAAAAACCTTGTCTATTGAGACTGTGGTGCCACCTAAGCTCTTAAGT  
GATAATTTATGTAGACAACTGAAAATCTCAAAACATCAAAAAGTATCTTTTTGAAAG  
TTAAAGTACATGAAAATGTAGAAAAAGAAACAGCAAAAAGTCCTGCAACTTGTTACA  
CAAATCAGTCCCCTTATTCAGTCATTGAAAATTCAGCCTTAGCTTTTTACACAAGTT  
GTAGTAGAAAACTTCTGTGAGTCAGACTTCATTACTTGAAGCAAAAAAATGGCTTA  
GAGAAGGAATATTTGATGGTCAACCAGAAAGAAATAAATACTGCAGATTATGTAGGA  
AATTATTTGTATGAAAATAATTCAAACAGTACTATAGCTGAAAATGACAAAAATCATC  
TCTCCGAAAAACAAGATACTTATTTAAGTAACAGTAGCATGTCTAACAGCTATTCTT  
ACCATTCTGATGAGGTATATAATGATTCAGGATATCTCTCAAAAAATAAACTTGATT  
CTGGTATTGAGCCAGTATTGAAGAATGTTGAAGATCAAAAAAACACTAGTTTTTCCA  
AAGTAATATCCAATGTAAAAGATGCAAATGCATACCCACAACTGTAAATGAAGATA  
TTTGCGTTGAGGAACTTGTGACTAGCTCTTCACCCTGCAAAAAATAAAATGCAGCC  
ATTAAATTGTCCATATCTAATAGTAATAATTTTGAGGTAGGGCCACCTGCATTTAGG  
ATAGCCAGTGGTAAAATCGTTTGTGTTTCACATGAAACAATTAAAAAAGTGAAAGAC  
ATATTTACAGACAGTTTCAGTAAAGTAATTAAGGAAAACAACGAGAATAAATCAAAA  
ATTTGCCAAACGAAAATTATGGCAGGTTGTTACGAGGCATTGGATGATTCAGAGGA  
TATTTCTTCATAACTCTCTAGATAATGATGAATGTAGCACGCATTACATAAGGTTTTT  
GCTGACATTCAGAGTGAAGAAATTTTACAACATAACCAAAATATGTCTGGATTGGA  
GAAAGTTTCTAAAATATCACCTTGTGATGTTAGTTTGGAACTTCAGATATATGTAA  
TGTAATATAGGGAAGCTTCATAAGTCAGTCTCATCTGCAAATACTTGTGGGATTTTT  
AGCACAGCAAGTGGAAAATCTGTCCAGGTATCAGATGCTTCATTACAAAACGCAAG  
ACAAGTGTCTTCTGAAATAGAAGATAGTACCAAGCAAGTCTTTTCCAAAGTATTGTT  
TAAAAGTAACGAACATTGAGACCAGCTCACAAGAGAAGAAAATACTGCTATACGTA  
CTCCAGAACATTTAATATCCCAAAAAGGCTTTTCATATAATGTGGTAAATTCATCTG

Figure 1D

CTTTCTCTGGATTTAGTACAGCAAGTGGAAAGCAAGTTTCCATTTTGTAGAAAGTTCCCT  
TACACAAAGTTAAGGGAGTGTTAGAGGAATTTGATTTAATCAGAACTGAGCATAGT  
CTTCACTATTCACCTACGTCTAGACAAAATGTATCAAAAATACTTCCTCGTGTTGAT  
AAGAGAAACCCAGAGCACTGTGTAAACTCAGAAATGGAAAAAACCTGCAGTAAAGA  
ATTTAAATTATCAAATAACTTAAATGTTGAAGGTGGTTCTTCAGAAAATAATCACTCT  
ATTAAAGTTTCTCCATATCTCTCTCAATTTCAACAAGACAAACAACAGTTGGTATTAG  
GAACCAAAGTCTCACTTGTGAGAACATTGTTTGGGAAAAGAACAGGCTTCA  
CCTAAAAACGTAAAAATGGAAATTGGTAAACTGAACTTTTTCTGATGTTCCCTGTG  
AAAACAAATATAGAAGTTTGTCTACTTACTCCAAAGATTTCAGAAAACCTACTTTGAAA  
CAGAAGCAGTAGAAATTGCTAAAGCTTTTATGGAAGATGATGAACTGACAGATTCT  
AAACTGCCAAGTCATGCCACACATTCTCTTTTACATGTCCCGAAAATGAGGAAATG  
GTTTTGTCAAATTCAAGAATTGGAAAAAGAAGAGGAGAGCCCTTATCTTAGTGgt  
aagtgttcattttaccttctgtgttgccaatca

**Exon 12**

aaaacatatatgaaatatttcttttagGAGAACCCTCAATCAAAAGAACTTATTAATGAATTTG  
ACAGGATAATAGAAAATCAAGAAAAATCCTTAAAGGCTTCAAAAAGCACTCCAGAT  
Ggtaaaattagcttttattata

**Exon 13**

aatatgtaataaaaataattgttcttagGCACAATAAAAGATCGAAGATTGTTTATGCATCATGT  
TTCTTTAGAGCCGATTACCTGTGTACCCTTTCGgtaagacatgtttaaattttctaa

**Exon 14**

ccccattgcagCACAACCTAAGGAACGTCAAGAGATACAGAATCCAAATTTTACCGCACCC  
TGGTCAAGAATTTCTGTCTAAATCTCATTTGTATGAACATCTGACTTTGGAAAAATCT  
TCAAGCAATTTAGCAGTTTCAGGACATCCATTTTATCAAGTTTCTGCTACAAGAAAT  
GAAAAAATGAGACACTTGATTACTACAGGCAGACCAACCAAGTCTTTGTTCCACC  
TTTTAAACTAAATCaCATTTTCACAGAGTTGAACAGTGTGTTAGGAATATTAAGTTG  
GAGGAAAACAGACAAAAGCAAAACATTGATGGACATGGCTCTGATGATAGTAAAAA  
TAAGATTAATGACAATGAGATTGATCAGTTTAAACAAAACAACCTCCAATCAAGCAGC  
AGCTGTAACCTTTCACAAAGTGTGAAGAAGAACCTTTAGgtattgtatgacaattgtgtgatgaatt

**Exon 15**

ttttgctaagtatttattctttgatagATTTAATTACAAGTCTTCAGAATGCCAGAGATATACAGGAT  
ATGCGAATTAAGAAGAAACAAAGGCAACGCGTCTTTCCACAGCCAGGCAGTCTGTA  
TCTTGCAAAAACATCCACTCTGCCTCGAATCTCTCTGAAAGCAGCAGTAGGAGGCC  
AAGTTCCCTCTGCgtgtccccataaacaggtatgtgt

**Exon 16**

ttttctttttgtgtgtgtttatgtgttagGTGTTCTCATAAACAGCTGTATACGTATGGCGTTTCTAA  
ACATTGCATAAAAATTAACAGCAAAAATGCAGAGTCTTTTCAGTTTCACACTGAAGA  
TTATTTTGGTAAGGAAAGTTTATGGACTGGAAAAGGAATACAGTTGGCTGATGGTG  
GATGGCTCATACCCTCCAATGATGGAAAGGCTGGAAAAGAAGAATTTTATAGgtactct  
atgcaaaaagattgtgtgttaacttttatg

## Figure 1E

### Exon 17

ttattgttcagGGCTCTGTGTGACACTCCAGGTGTGGATCCAAAGCTTATTTCTAGAATTT  
GGGTTTATAATCACTATAGATGGATCATATGGAACTGGCAGCTATGGAATGTGCC  
TTTCCTAAGGAATTTGCTAATAGATGCCTAAGCCCAGAAAGGGTGCTTCTTCAACTA  
AAATACAGgcaagtttaaagcatt

### Exon 18

tttgttttcacttttagATATGATACGGAAATTGATAGAAGCAGAAGATCGGCTATAAAAAAGA  
TAATGGAAAGGGATGACACAGCTGCAAAAACACTTGTTCTCTGTGTTTCTGACATA  
ATTTCAATTGAGCGCAAATATATCTGAACTTCTAGCAATAAACTAGTAGTGCAGAT  
ACCCAAAAAGTGGCCATTATTGAACTTACAGATGGGTGGTATGCTGTTAAGGCCCA  
GTTAGATCCTCCCCTCTTAGCTGTCTTAAAGAATGGCAGACTGACAGTTGGTCAGA  
AGATTATTCTTCATGGAGCAGAACTGGTGGGCTCTCCTGATGCCTGTACACCTCTT  
GAAGCCCCAGAATCTCTTATGTTAAAGgtaaatt

### Exon 19

taaacaatatatttattaaattgtccagATTTCTGCTAACAGTACTCGGCCTGCTCGCTGGTATAC  
CAAACCTTGGATTCTTTCTGACCCTAGACCTTTTCTCTGCCCTTATCATCGCTTTT  
CAGTGATGGAGGAAATGTTGTTGTGTTGATGTAATTATTCAAAGAGCATACCCTAT  
ACAGgatatgatgtattcttgaaactta

### Exon 20

tttggtgtgtgtaacacattattacagTGGATGGAGAAGACATCATCTGGATTATACATATTTTCGC  
AATGAAAGAGAGGAAGAAAAGGAAGCAGCAAAATATGTGGAGGCCCAACAAAAGA  
GACTAGAAGCCTTATTTCACTAAAATTCAGGAGGAATTTGAAGAACATGAAGgtaaaatt  
agttatatggtacacattgttatttc

### Exon 21

agtttagtgaattaataatcctttgttttcttagAAAACACAACAAAACCATATTTACCATCACGTGCAC  
TAACAAGACAGCAAGTTCGTGCTTTGCAAGATGGTGCAGAGCTTTATGAAGCAGTG  
AAGAATGCAGCAGACCCAGCTTACCTTGAGgtgagagagtaagaggacatataatgag

### Exon 22

ttttattccaatatcttaaattggtcacagGGTTATTTCAGTGAAGAGCAGTTAAGAGCCTTGAATAA  
TCACAGGCAAATGTTGAATGATAAGAAACAAGCTCAGATCCAGTTGGAAATTAGGA  
AGGCCATGGAATCTGCTGAACAAAAGGAACAAGGTTTATCAAGGGATGTCACAAC  
CGTGTGGAAGTTGCGTATTGTAAGCTATTCAAAAAAAGAAAAAGATTGAGgtaagtatgt  
aaatgctttgtttta

### Exon 23

tctccaaacagTTATACTGAGTATTTGGCGTCCATCATCAGATTTATATTCTCTGTTAACA  
GAAGGAAAGAGATACAGAATTTATCATCTTGCAACTTCAAAATCTAAAAGTAAATCT  
GAAAGAGCTAACATACAGTTAGCAGCGACAAAAAAACTCAGTATCAACAACCTACC  
Ggtacaaaccttcattgtaatttt

Figure 1F

Exon 24

gaatgtttgtttgtttctgtagGTTTCAGATGAAATTTTATTTTCAGATTTACCAGCCACGGGAGC  
CCCTTCACTTCAGCAAATTTTATAGATCCAGACTTTTCAGCCATCTTGTTCTGAGGTGG  
ACCTAATAGGATTTGTCGTTTCTGTTGTGAAAAAACAGgtaatgcacaatatagttaatgttttat  
tgattcttttaaaaaacattgtct

Exon 25

taacattcttttctttttccattctagGACTTGCCCCCTTTCGTCTATTTGTCAGACGAATGTTACAA  
TTTACTGGCAATAAAGTTTTGGATAGACCTTAATGAGGACATTATTAAGCCTCATAT  
GTTAATTGCTGCAAGCAACCTCCAGTGGCGACCAGAATCCAAATCAGGCCTTCTTA  
CTTTATTTGCTGGAGATTTTTCTGTGTTTTCTGCTAGTCCAAAAGAGGGCCACTTTC  
AAGAGACATTCAACAAAATGAAAAATACTGTTGAGgtaaggta

Exon 26

ataaagcagctttccactattttcttagAATATTGACATACTTTGCAATGAAGCAGAAAAACAAGCT  
TATGCATATACTGCATGCAAATGATCCCAAGTGGTCCACCCCACTAAAGACTGTA  
CTTCAGGGCCGTACACTGCTCAAATCATTCTGTTACAGGAAACAAGCTTCTGgtaa  
gtaaatgtaaactcaaggaatattataag

Exon 27

tacgttttcattttttatcagATGTCTTCTCCTAATTGTGAGATATATTATCAAAGTCCTTTATCA  
CTTTGTATGGCCAAAAGGAAGTCTGTTTCCACACCTGTCTCAGCCCAGATGACTTC  
AAAGTCTTGTAAGGGGGAGAAAGAGATTGATGACCAAAGAAGCTGCAAAAAGAGAA  
GAGCCTTGGATTTCTTGAGTAGACTGCCTTTACCTCCACCTGTTAGTCCCATTGTA  
CATTTGTTTCTCCGGCTGCACAGAAGGCATTTTCAGCCACCAAGGAGTTGTGGCAC  
CAAATACGAAACACCCATAAAGAAAAAAGAAGCTGAATTCTCCTCAGATGACTCCATT  
TAAAAAATTCAATGAAATTTCTCTTTTGGAAAGTAATTCAATAGCTGACGAAGAACTT  
GCATTGATAAATACCCAAGCTCTTTTGTCTGGTTCAACAGGAGAAAAACAATTTATA  
TCTGTCAGTGAATCCACTAGGACTGCTCCCACCAGTTTCAAGAGATTATCTCAGACT  
GAAACGACGTTGTACTACATCTCTGATCAAAGAACAGGAGAGTTCCCAGGCCAGTA  
CGGAAGAATGTGAGAAAAATAAGCAGGACACAATTACAATAAAAAATATATCTAA  
GCATTTGCAAAGGCGACAATAAATTATTGACGCTTAACCTTTCCAGTTTATAAGACT  
GGA

## Figure 2A

### Exon 2

taagtcattttggtctctgtttgcagACTTATTTACCAAGCATTGGAGGAATATCGTAGGTAAAA  
ATGCCTATTGGATCCAAAGAGAGGCCAACATTTTTTGAATTTTAAAGACACGCTGC  
AACAAAGCAGgtattgacaaatttatataac

### Exon 3

gggatttttttaaatagATTTAGGACCAATAAGTCTTAATTGGTTTGAAGAACTTTCTTCAG  
AAGCTCCACCCTATAATTCTGAACCTGCAGAAGAATCTGAACATAAAAAACAACAATT  
ACGAACCAAACCTATTTAAACTCCACAAAGGAAACCATCTTATAATCAGCTGGCTT  
CAACTCCAATAATATTCAAAGAGCAAGGGCTGACTCTGCCGCTGTACCAATCTCCT  
GTAAAAGAATTAGATAAATTCAAATTAGACTTAGgtaagtaatgcaatatgtagactgggg

### Exon 4

tcactgaattattgtactgttcagGAAGGAATGTTCCCAATAGTAGACATAAAAGTCTTCGCACA  
GTGAAAACATAAAATGGATCAAGCAGATGATGTTTCCTGTCCACTTCTAAATTCTTGT  
CTTAGTGAAAGgtatgatgaagctattatataaaa

### Exon 5

agggatttgctttgttttatttagTCCTGTTGTTCTACAATGTACACATGTAACACCACAAAGAG  
ATAAGTCAGgtatgattaaaaacaatgcttttattctt

### Exon 6

ttaacaattttcccttttttacccccagTGGTATGTGGGAGTTTGTTCATACACCAAAGTTTGTG  
AAGgtaaatatt

### Exon 7

taatgatcagggcatttctataaaaaataaactattttcttctccagGGTCGTCAGACACCAAACATATT  
TCTGAAAGTCTAGGAGCTGAGGTGGATCCTGATATGTCTTGGTCAAGTTCTTTAGC  
TACACCACCCACCCTTAGTTCTACTGTGCTCATAGgtaataata

### Exon 8

tttatcttacagTCAGAAATGAAGAAGCATCTGAAACTGTATTTCTCATGATACTACTGC  
Tgtaagtaaatatgacattgattagact

### Exon 9

taaactataattttgcagAATGTGAAAAGCTATTTTTCCAATCATGATGAAAGTCTGAAGAAA  
AATGATAGATTTATCGCTTCTGTGACAGACAGTGAAAACACAAATCAAAGAGAAGC  
TGCAAGTCATGgtaagtcctct

### Exon 10

ttaatgtgcttctgtttatactttaacagGATTTGGAAAAACATCAGGGAATTCATTTAAAGTAAATA  
GCTGCAAAGACCACATTGGAAAGTCAATGCCAAATGTCCTAGAAGATGAAGTATAT  
GAAACAGTTGTAGATACCTCTGAAGAAGATAGTTTTTCATTATGTTTTCTAAATGTA  
GAACAAAAAATCTACAAAAAGTAAGAACTAGCAAGACTAGGAAAAAATTTTCCATG  
AAGCAAACGCTGATGAATGTGAAAAATCTAAAAACCAAGTGAAAGAAAAATACTCAT  
TTGTATCTGAAGTGGAACCAAATGATACTGATCCATTAGATTCAAATGTAGCAAATC



Figure 2B

AGAAGCCCTTTGAGAGTGGAAGTGACAAAATCTCCAAGGAAGTTGTACCGTCTTTG  
GCCTGTGAATGGTCTCAACTAACCCTTTTCAGGTCTAAATGGAGCCCAGATGGAGAA  
AATACCCCTATTGCATATTTCTTCATGTGACCAAAATATTTTCAGAAAAAGACCTATTA  
GACACAGAGAACAAAAGAAAGAAAGATTTTCTTACTTCAGAGAATTCTTTGCCACGT  
ATTTCTAGCCTACCAAAATCAGAGAAGCCATTAAATGAGGAAACAGTGGTAAATAA  
GAGAGATGAAGAGCAGCATCTTGAATCTCATAACAGACTGCATTCTTGCAGTAAAGC  
AGGCAATATCTGGAAGTTCTCCAGTGGCTTCTTCATTTTCAGGGTATCAAAAAGTCTA  
TATTCAGAATAAGAGAATCACCTAAAGAGACTTTCAATGCAAGTTTTTTCAGGTCATA  
TGACTGATCCAAACTTTAAAAAAGAACTGAAGCCTCTGAAAGTGGACTGGAAATA  
CATACTGTTTGCTCACAGAAGGAGGACTCCTTATGTCCAAATTTAATTGATAATGGA  
AGCTGGCCAGCCACCACCACACAGAATTCTGTAGCTTTGAAGAATGCAGGTTTAAAT  
ATCCACTTTGAAAAAGAAAAACAAATAAGTTTATTTATGCTATACATGATGAAACATCT  
TATAAAGGAAAAAAAATACCGAAAGACCAAAAATCAGAACTAATTAAGTTCAGCC  
CAGTTTGAAGCAAATGCTTTTGAAGCACCCTTACATTTGCAAATGCTGATTCAGGt  
acctctgtct

Exon 11

tttggttttatgtttagGTTTATTGCATTCTTCTGTGAAAAGAAGCTGTTACAGAAATGATTCT  
GAAGAACCAACTTTGTCCTTAAGTACTGCTCTTTTGGGACAATTCTGAGGAAATGTTCT  
AGAAATGAAACATGTTCTAATAATACAGTAATCTCTCAGGATCTTGATTATAAAGAA  
GCAAAATGTAATAAGGAAAACTACAGTTATTTATTACCCAGAGCTGATTCTCTG  
TCATGCCTGCAGGAAGGACAGTGTGAAAATGATCCAAAAAGCAAAAAAGTTTCAGA  
TATAAAGAAGAGGTCTTGGCTGCAGCATGTCAACCCAGTACAACATTCAAAAGTGG  
AATACAGTGATACTGACTTTCAATCCCAGAAAAGTCTTTTATATGATCATGAAAATG  
CCAGCACTCTTATTTTAACTCCTACTTCCAAGGATGTTCTGTCAAACCTAGTCATGA  
TTTCTAGAGGCAAAGAATCATAAAAATGTCAGACAAGCTCAAAGGTAACAATTATG  
AATCTGATGTTGAATTAACCAAAAATATTCCCATGGAAAAGAATCAAGATGTATGTG  
CTTTAAATGAAAATTATAAAAACGTTGAGCTGTTGCCACCTGAAAAATACATGAGAG  
TAGCATCACCTTCAAGAAAGGTACAATTCAACCAAAACACAAATCTAAGAGTAATCC  
AAAAAATCAAGAAGAACTACTTCAATTTCAAAAATAACTGTCAATCCAGACTCTG  
AAGAACTTTTTCTCAGACAATGAGAATAATTTTGTCTTCCAAGTAGCTAATGAAAGGA  
ATAATCTTGCTTTAGGAAATACTAAGGAACTTCATGAAACAGACTTGACTTGTGTAA  
ACGAACCCATTTTCAAGAACTCTACCATGGTTTTATATGGAGACACAGGTGATAAAC  
AAGCAACCCCAAGTGTCAATTAAGAAAGATTTGGTTTTATGTTCTTGCAGAGGAGAAC  
AAAAATAGTGTAAGCAGCATATAAAAATGACTCTAGGTCAAGATTTAAATCGGAC  
ATCTCCTTGAATATAGATAAAAATACCAGAAAAAATAATGATTACATGAACAAATGG  
GCAGGACTCTTAGGTCCAATTTCAAATCACAGTTTTTGGAGGTAGCTTCAGAACAGC  
TTCAAATAAGGAAATCAAGCTCTCTGAACATAACATTAAGAAGAGCAAAATGTTCTT  
CAAAGATATTGAAGAACAATATCCTACTAGTTTAGCTTGTGTTGAAATTGTAAATAC  
CTTGGCATTAGATAATCAAAAGAACTGAGCAAGCCTCAGTCAATTAATACTGTATC  
TGCACATTTACAGAGTAGTGTAGTTGTTTCTGATTGTAAAAATAGTCATATAACCCC  
TCAGATGTTATTTTCCAAGCAGGATTTTAAATTCAAACCATAATTTAACACCTAGCCAA  
AAGGCAGAAATTACAGAAGTTTCTACTATATTAGAAGAATCAGGAAGTCAGTTTGAA  
TTTACTCAGTTTAGAAAACCAAGCTACATATTGCAGAAGAGTACATTTGAAGTGCCT  
GAAAACCGAGATGACTATCTTAAAGACCACTTCTGAGGAATGCAGAGATGCTGATCT  
TCATGTCATAATGAATGCCCCATCGATTGGTCAGGTAGACAGCAGCAAGCAATTTG



Figure 2C

AAGGTACAGTTGAAATTAACGGAAGTTTGCTGGCCTGTTGAAAAATGACTGTAAC  
AAAAGTGCTTCTGGTTATTTAACAGATGAAAATGAAGTGGGGTTTAGGGGCTTTTAT  
TCTGCTCATGGCACAAAACCTGAATGTTTCTACTGAAGCTCTGCAAAAAGCTGTGAA  
ACTGTTTAGTGATATTGAGAATATTAGTGAGGAACTTCTGCAGAGGTACATCCAAT  
AAGTTTATCTTCAAGTAAATGTCATGATTCTGTTGTTTCAATGTTTAAGATAGAAAAT  
CATAATGATAAACTGTAAAGTGAaaaaaATAATAATGCCAACTGATATTACAAAATA  
ATATTGAAATGACTACTGGCACTTTTGTGGAAGAAATTACTGAAAATTACAAGAGAA  
ATACTGAAAATGAAGATAACAAATATACTGCTGCCAGTAGAAATTCTCATAACTTAG  
AATTTGATGGCAGTGATTCAAGTAAAAATGATACTGTTTGTATTCATAAAGATGAAA  
CGGACTTGCTATTTACTGATCAGCACACATATGTCTTAAATTATCTGGCCAGTTTA  
TGAAGGAGGGAAACACTCAGATTAAAGAAGATTTGTCAGATTTAACTTTTTTGAAG  
TTGCGAAAGCTCAAGAAGCATGTCATGGTAATACTTCAAATAAAGAACAGTTAACT  
GCTACTAAAACGGAGCAAAATATAAAAGATTTTGAGACTTCTGATACATTTTTTCAG  
ACTGCAAGTGGGAAAAATATTAGTGTGCGCCAAAGAGTCATTTAATAAAATTGTAAAT  
TTCTTTGATCAGAAACCAGAAGAATTGCATAACTTTTCTTAAATTCTGAATTACATT  
CTGACATAAGAAAGAACAAAATGGACATTCTAAGTTATGAGGAAACAGACATAGTT  
AAACACAAAATACTGAAAGAAAGTGTCCAGTTGGTACTGGAAATCAACTAGTGAC  
CTTCCAGGGACAACCCGAACGTGATGAAAAGATCAAAGAACCTACTCTGTTGGGTT  
TTCATACAGCTAGCGGGAAAAAAGTTAAAATTGCAAAGGAATCTTTGGACAAAGTG  
AAAAACCTTTTTGATGAAAAAGAGCAAGGTACTAGTGAAATCACCAGTTTTAGCCAT  
CAATGGGCAAAGACCCTAAAGTACAGAGAGGCCTGTAAAGACCTTGAATTAGCAT  
GTGAGACCATTGAGATCACAGCTGCCCCAAAGTGTAAGAAATGCAGAATTCTCTC  
ATAATGATAAAAACCTTGTTTCTATTGAGACTGTGGTGCCACCTAAGCTCTTAAGT  
GATAATTTATGTAGACAACTGAAAATCTCAAAACATCAAAAAGTATCTTTTTGAAAG  
TTAAAGTACATGAAAATGTAGAAAAAGAAACAGCAAAAAGTCCTGCAACTTGTTACA  
CAAATCAGTCCCCTTATTCAGTCATTGAAAATTCAGCCTTAGCTTTTTACACAAGTT  
GTAGTAGAAAACTTCTGTGAGTCAGACTTCATTACTTGAAGCAAAAAAATGGCTTA  
GAGAAGGAATATTTGATGGTCAACCAGAAAGAATAAATACTGCAGATTATGTAGGA  
AATTATTTGTATGAAAATAATTCAAACAGTACTATAGCTGAAAATGACAAAAATCATC  
TCTCCGAAAAACAAGATACTTATTTAAGTAACAGTAGCATGTCTAACAGCTATTCCT  
ACCATTCTGATGAGGTATATAATGATTCAGGATATCTCTCAAAAAATAAACTTGATT  
CTGGTATTGAGCCAGTATTGAAGAATGTTGAAGATCAAAAAACACTAGTTTTTCCA  
AAGTAATATCCAATGTAAAAGATGCAAATGCATACCCACAACTGTAAATGAAGATA  
TTTGCGTTGAGGAACTTGTGACTAGCTCTTCACCCTGCAAAAAATAAAATGCAGCC  
ATTAAATTGTCCATATCTAATAGTAATAATTTTGAGGTAGGGCCACCTGCATTTAGG  
ATAGCCAGTGGTAAAATCGTTTGTGTTTCACATGAAACAATTAaaaaAGTGAAAGAC  
ATATTTACAGACAGTTTCAGTAAAGTAATTAAGGAAAACAACGAGAATAAATCAAAA  
ATTTGCCAAACGAAAATTATGGCAGGTTGTTACGAGGCATTGGATGATTCAGAGGA  
TATTCTTCATAACTCTCTAGATAATGATGAATGTAGCACGCATTACATAAGGTTTTT  
GCTGACATTCAGAGTGAAGAAATTTTACAACATAACCAAAATATGTCTGGATTGGA  
GAAAGTTTCTAAAATATCACCTTGTGATGTTAGTTTGGAACTTCAGATATATGTAAA  
TGTAGTATAGGGAAGCTTCATAAGTCAGTCTCATCTGCAAATACTTGTGGGATTTTT  
AGCACAGCAAGTGGAATCTGTCCAGGTATCAGATGCTTCATTACAAAACGCAAG  
ACAAGTGTTTTCTGAAATAGAAGATAGTACCAAGCAAGTCTTTTCAAAGTATTGTT  
TAAAAGTAACGAACATTGAGACCAGCTCACAAGAGAAGAAAATACTGCTATACGTA  
CTCCAGAACATTTAATATCCCAAAAAGGCTTTTCATATAATGTGGTAAATTCATCTG

Figure 2D

CTTTCTCTGGATTTAGTACAGCAAGTGGAAGCAAGTTTCCATTTTAGAAAGTTCCT  
TACACAAAGTTAAGGGAGTGTTAGAGGAATTTGATTTAATCAGAACTGAGCATAGT  
CTTCACTATTCACCTACGTCTAGACAAAATGTATCAAAAATACTTCCTCGTGTTGAT  
AAGAGAAACCCAGAGCACTGTGTAAACTCAGAAATGGAAAAAACCTGCAGTAAAGA  
ATTTAAATTATCAAATAACTTAAATGTTGAAGGTGGTTCTTCAGAAAATAATCACTCT  
ATTAAAGTTTCTCCATATCTCTCTCAATTTCAACAAGACAAACAACAGTTGGTATTAG  
GAACCAAAGTCTCACTTGTGAGAACATTGTTTGGGAAAAGAACAGGCTTCA  
CCTAAAAACGTAAAAATGGAAATTGGTAAACTGAACTTTTTCTGATGTTCTGTG  
AAAACAAATATAGAAGTTTGTCTACTTACTCCAAAGATTGAGAAAATACTTTGAAA  
CAGAAGCAGTAGAAATTGCTAAAGCTTTTATGGAAGATGATGAACTGACAGATTCT  
AAACTGCCAAGTCATGCCACACATTCTCTTTTACATGTCCCGAAAATGAGGAAATG  
GTTTTGTCAAATTCAAGAATTGGAAAAAGAAGAGGAGAGCCCTTATCTTAGTGgt  
aagtgttcattttacctttcgtgttgccaatca

**Exon 12**

aaaacatatatgaaatatttcttttagGAGAACCTCAATCAAAAGAACTTATTAATGAATTTG  
ACAGGATAATAGAAAATCAAGAAAAATCCTTAAAGGCTTCAAAAAGCACTCCAGAT  
Ggtaaaattagctttttattata

**Exon 13**

aatatgtaatatataaataattgtttcctagGCACAATAAAAGATCGAAGATTGTTTATGCATCATGT  
TTCTTTAGAGCCGATTACCTGTGTACCCTTTTCGtaagacatgtttaaattttctaa

**Exon 14**

ccccattgcagCACAACTAAGGAACGTCAAGAGATACAGAATCCAAATTTTACCGCACC  
TGGTCAAGAATTTCTGTCTAAATCTCATTTGTATGAACATCTGACTTTGGAAAAATCT  
TCAAGCAATTTAGCAGTTTCAGGACATCCATTTTATCAAGTTTCTGCTACAAGAAAT  
GAAAAAATGAGACACTTGATTACTACAGGCAGACCAACCAAGTCTTTGTTCCACC  
TTTTAAACTAAATCACATTTTCACAGAGTTGAACAGTGTGTTAGGAATATTAAGTTG  
GAGGAAAACAGACAAAAGCAAAACATTGATGGACATGGCTCTGATGATAGTAAAAA  
TAAGATTAATGACAATGAGATTCATCAGTTTAACAAAAACAACTCCAATCAAGCAGC  
AGCTGTAACCTTTCACAAAGTGTGAAGAAGAACCTTTAGgtattgtatgacaatttgtgtgatgaatt

**Exon 15**

ttttgctaagtatttattctttgatagATTTAATTACAAGTCTTCAGAATGCCAGAGATATACAGGAT  
ATGCGAATTAAGAAGAAACAAAGGCAACGCGTCTTTCCACAGCCAGGCAGTCTGTA  
TCTTGCAAAAACATCCACTCTGCCTCGAATCTCTCTGAAAGCAGCAGTAGGAGGCC  
AAGTTCCCTCTGCGTGTTCTCATAAACAGgtatgtgt

**Exon 16**

ttttctttttgtgtgtgtttattttgtgttagCTGTATACGTATGGCGTTTCTAAACATTGCATAAAAATTA  
ACAGCAAAAATGCAGAGTCTTTTCAGTTTCACACTGAAGATTATTTTGGTAAGGAAA  
GTTTATGGACTGGAAAAGGAATACAGTTGGCTGATGGTGGATGGCTCATACCCTCC  
AATGATGGAAAGGCTGGAAAAGAAGAATTTTATAGgtactctatgcaaaaagattgtgtgttaactttt  
atg

Figure 2E

Exon 17

ttattgttcagGGCTCTGTGTGACACTCCAGGTGTGGATCCAAAGCTTATTTCTAGAATTT  
GGGTTTATAATCACTATAGATGGATCATATGGAACTGGCAGCTATGGAATGTGCC  
TTTCCTAAGGAATTTGCTAATAGATGCCTAAGCCCAGAAAGGGTGCTTCTTCAACTA  
AAATACAGgcaagtttaaagcatt

Exon 18

tttgttttcacttttagATATGATACGGAAATTGATAGAAGCAGAAGATCGGCTATAAAAAAGA  
TAATGGAAAGGGATGACACAGCTGCAAAAACACTTGTTCTCTGTGTTTCTGACATA  
ATTTCAATTGAGCGCAAATATATCTGAACTTCTAGCAATAAACTAGTAGTGACAGAT  
ACCCAAAAAGTGGCCATTATTGAACTTACAGATGGGTGGTATGCTGTTAAGGCCCA  
GTTAGATCCTCCCCTCTTAGCTGTCTTAAAGAATGGCAGACTGACAGTTGGTCAGA  
AGATTATTCTTCATGGAGCAGAACTGGTGGGCTCTCCTGATGCCTGTACACCTCTT  
GAAGCCCCAGAATCTCTTATGTTAAAGgtaaatt

Exon 19

taaataatataatttataattgtccagATTTCTGCTAACAGTACTCGGCCTGCTCGCTGGTATAC  
CAAAGTTGGATTCTTTCTGACCCTAGACCTTTTCTCTGCCCTTATCATCGCTTTT  
CAGTGATGGAGGAAATGTTGGTTGTGTTGATGTAATTATTCAAAGAGCATACCCTAT  
ACAGgatatgatgtattcttgaactta

Exon 20

tttgggtgtgtgaacacattattacagTGGATGGAGAAGACATCATCTGGATTATACATATTTTCGC  
AATGAAAGAGAGGAAGAAAAGGAAGCAGCAAAATATGTGGAGGCCCAACAAAAGA  
GACTAGAAGCCTTATTCATAAAATTCAGGAGGAATTTGAAGAACATGAAGgtaaaatt  
agttatatggtacacattgttatttc

Exon 21

agttagtgaattaataatccctttgttttcttagAAAACACAACAAAACCATATTTACCATCACGTGCAC  
TAACAAGACAGCAAGTTTCGTGCTTTGCAAGATGGTGCAGAGCTTTATGAAGCAGTG  
AAGAATGCAGCAGACCCAGCTTACCTTGAGgtgagagagtaagaggacataataatgag

Exon 22

ttttattccaatatcttaaatggtcacagGGTTATTTAGTGAAGAGCAGTTAAGAGCCTTGAATAA  
TCACAGGCCAAATGTTGAATGATAAGAAACAAGCTCAGATCCAGTTGGAAATTAGGA  
AGGCCATGGAATCTGCTGAACAAAAGGAACAAGGTTTATCAAGGGATGTCACAACC  
GTGTGGAAGTTGCGTATTGTAAGCTATTCAAAAAAAGAAAAAGATTGAGgtaagtatgta  
aatgctttgtttta

Exon 23

tctccaaacagTTATACTGAGTATTTGGCGTCCATCATCAGATTTATATTCTCTGTTAACA  
GAAGGAAAGAGATACAGAATTTATCATCTTGCAACTTCAAATCTAAAAGTAAATCT  
GAAAGAGCTAACATACAGTTAGCAGCGACAAAAAACTCAGTATCAACAACCTACC  
Ggtacaaacctttcattgtaatttt

Figure 2F

Exon 24

gaatttttgtttctgttagGTTTCAGATGAAATTTTATTTTCAGATTTACCAGCCACGGGAGC  
CCCTTCACTTCAGCAAATTTTATAGATCCAGACTTTTCAGCCATCTTGTTCTGAGGTGG  
ACCTAATAGGATTTGTGCTTTCTGTTGTGAAAAAACAGGtaatgcacaatatagttaattttttat  
tgattcttttaaaaaacattgtct

Exon 25

taacattcttttctttttccattctagGACTTGCCCCCTTTCGTCTATTTGTCAGACGAATGTTACAA  
TTTACTGGCAATAAAGTTTTGGATAGACCTTAATGAGGACATTATTAAGCCTCATAT  
GTTAATTGCTGCAAGCAACCTCCAGTGGCGACCAGAATCCAAATCAGGCCTTCTTA  
CTTTATTTGCTGGAGATTTTCTGTGTTTTCTGCTAGTCCAAAAGAGGGCCACTTTC  
AAGAGACATTCAACAAAATGAAAAATACTGTTGAGGtaaggta

Exon 26

ataaagcagctttccacttattttcttagAATATTGACATACTTTGCAATGAAGCAGAAAACAAGCT  
TATGCATATACTGCATGCAAATGATCCCAAGTGGTCCACCCCACTAAAGACTGTA  
CTTCAGGGCCGTACACTGCTCAAATCATTCTGGTACAGGAAACAAGCTTCTGgtaa  
gtaaatgtaaactcaaggaatattataag

Exon 27

tacgttttcattttttatcagATGTCTTCTCCTAATTGTGAGATATATTATCAAAGTCCTTTATCA  
CTTTGTATGGCCAAAAGGAAGTCTGTTTCCACACCTGTCTCAGCCCAGATGACTTC  
AAAGTCTTGTAAGGGGAGAAAGAGATTGATGACCAAAGAAGTGCAAAAAGAGAA  
GAGCCTTGGAATTTCTTGAGTAGACTGCCTTTACCTCCACCTGTTAGTCCCATTTGTA  
CATTTGTTTCTCCGGCTGCACAGAAGGCATTTTCAGCCACCAAGGAGTTGTGGCAC  
CAAATACGAAACACCCATAAAGAAAAAAGAAGTGAATTCTCCTCAGATGACTCCATT  
TAAAAAATTCAATGAAATTTCTCTTTTGGAAGTAATTCAATAGCTGACGAAGAAGT  
GCATTGATAAATACCCAAGCTCTTTTGTCTGGTTCAACAGGAGAAAAACAATTTATA  
TCTGTCAGTGAATCCACTAGGACTGCTCCCACCAAGTTTCAAGAGATTATCTCAGACT  
GAAACGACGTTGTACTACATCTCTGATCAAAGAACAGGAGAGTTCCCAGGCCAGTA  
CGGAAGAATGTGAGAAAAATAAGCAGGACACAATTACAATAAAAAATATATCTAA  
GCATTTGCAAAGGCGACAATAAATTATTGACGCTTAACCTTTCCAGTTTATAAGACT  
GGA

240647.1.02299

# FIGURE 3

| Marker<br>Position | INDIVIDUAL # |     |    |     |    |     |    |     |    |     |
|--------------------|--------------|-----|----|-----|----|-----|----|-----|----|-----|
|                    | #1           |     | #2 |     | #3 |     | #4 |     | #5 |     |
| 1093               | A            | A   | A  | A   | A  | C   | A  | A   | A  | C   |
| 1342               | A            | C   | A  | C   | A  | A   | A  | C   | A  | C   |
| 1593               | A            | A   | A  | A   | A  | A   | A  | A   | A  | G   |
| 2457               | T            | T   | T  | T   | T  | C   | T  | T   | T  | C   |
| 2908               | G            | G   | G  | G   | G  | G   | G  | G   | G  | A   |
| 3199               | A            | A   | A  | A   | A  | G   | A  | A   | A  | G   |
| 3624               | A            | A   | A  | A   | A  | G   | A  | A   | A  | A   |
| 4035               | T            | T   | T  | C   | T  | T   | T  | T   | T  | T   |
| 7470               | A            | A   | A  | A   | A  | G   | A  | G   | A  | A   |
| 9079               | G            | G   | G  | G   | G  | G   | G  | G   | G  | A   |
|                    | GB           | OM1 | GB | OM2 | GB | OM3 | GB | OM4 | GB | OM5 |